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ABSTRACT

This investigation was concerned with the effects of negative evaluations by an adult on elementary school children's social interactions and performance. A two-component theory of evaluation called for experimental creation of evaluative comments which involved two degrees of strength of criticism and two degrees of helpful information provided by the criticisms. While the major hypotheses were generally confirmed, significant interaction effects between evaluative variables and sex of pupils occurred. Implications for the use of teacher evaluation in the classroom and the use of experimentally controlled simulated classroom techniques for social psychological educational research are discussed. (Author)

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THE EFFECTS OF ADULT EVALUATION ON ELEMENTARY SCHOOL CHILDREN'S WORK AND SOCIAL INTERACTION: AN EXPERIMENTAL STUDY OF AFFECTIVE TONE AND HELPFULNESS

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Introduction

Evaluation in the classroom--defined as a judgement of any pupil attribute including his ability, performance, appearance, manners, or behavior--is an integral part of the educative process as practiced in our schools today. The official reason for evaluating pupils is to determine whether they can advance to more difficult work. But, evaluation is also used to encourage and to direct involvement in current learning activities. It is further employed to influence pupils to follow institutional rules and procedures. Even if the teacher's intention is to motivate pupils by the promise of reward or to guide them by helpful criticism, pupils are bound to infer from evaluations of their work and behavior how they are viewed as persons. Since there are so many reasons, legitimate and otherwise, to evaluate pupils, it would not be an exaggeration to say that school, for most pupils, is a place where one is continually being appraised.

Silberman (1973) notes that evaluation is frequently viewed by pupils as threatening. He points out, further, that teachers frequently evaluate pupils in front of their peers. With each teacher judgement the pupil's sense of self esteem hangs in the balance. This public communication of a pupil's successes and failures must produce an atmosphere of tension resulting in a variety of protective or defensive behaviors.

Despite the pervasiveness of the evaluative atmosphere in the classroom and its presumed effects on the recipients, the literature is less than optimally informative regarding the

nature of the effects of evaluation on children. Most particularly, there is an absence of a clear theoretical framework which can explain the contradictory effects of criticism discussed by Rosenshine (1969).

In studying classroom life, Leacock (1969) and her colleagues considered dimensions of teacher behavior which they hoped would further their understanding of the processes by which some goals are reinforced and others undermined. They examined teachers' style of evaluation and control rated on a continuum ranging from supportive to undermining as it related to the total classroom atmosphere. They also counted all teacher remarks directed at behavior in a three hour period, coding them as positive, negative, or neutral. They found "that 'supportiveness' of teacher style, as rated by observers, shows no consistent relation to proportion of positive-to-negative teacher statements" (Leacock, 1969, p. 92).

Rosenshine (1971) reviewed several studies in which various measures of teacher approval and disapproval were used as observational variables. Of seventeen studies which included variables that might be labelled teacher criticism, half produced significant negative correlations between teacher use of criticism and pupil achievement on at least one criterion measure. The teacher criticism variable in these studies can be subdivided into mild criticism, such as giving academic directions or mild disapproval, and strong criticism, such as rejection of student responses, threat or shaming. In no study was mild criticism negatively related to achievement, while several of the studies (Hunter, 1968;

Perkins, 1965; Spaulding, 1965; and Wallen, 1966) reported negative relationships between stronger criticism and achievement. From his extensive review of the studies of criticism and achievement, Rosenshine (1971) concludes "there is no evidence to support a claim that a teacher should avoid telling a student that he is wrong, or should avoid giving academic directions. However, teachers who use a great deal of criticism appear consistently to have classes who achieve less in most subject areas" (p. 61).

An area of related study has been directed toward the distribution of approval and disapproval in the classroom. One of the most consistent findings has been that boys receive more disapproval contacts from teachers than do girls (Meyer & Thompson, 1956; Brophy & Good, 1970).

A Theory of Negative Evaluation

Evaluation can be defined as the process of determining the worth of something. So conceived, evaluation is a complex process, composed of affective and cognitive components, involving standards which may vary from objectively agreed upon requirements to purely subjective judgements. Teachers evaluate the child in the classroom in many ways. The child becomes so attuned to the teacher that her look often conveys an evaluation. Sometimes this evaluation is unintentional, sometimes it is deliberate. Teachers often use evaluation as reinforcement to reward or to punish the child's efforts, or they may use evaluation as mere information giving, e.g. "This work is not spelled right," and not realize that it carries evaluation with it.

Just how these positive and negative evaluations operate,

however, is by no means clear. For one thing, because evaluations serve a variety of functions, different children may interpret, and hence react to them, differently. Thus, even negative evaluations may serve as positive reinforcements if they help a child to correct his mistakes, or call attention to himself.

Further, the relationship between praise and criticism is not a simple one. There is no study which shows that reward is ineffective (negatively related to achievement), be it in the form of external reinforcement (candy, money), or intrinsic satisfaction with work, or be it praise, approval, or acceptance and use of student ideas. The problem seems to lie in the area of negative evaluation, criticism, disapproval, withholding of rewards, etc. Sometimes they help, sometimes they hinder. Mild criticism has been found to be positively related to achievement while strong criticism is negatively related (Rosenshine, 1969). But we do not know why. The theory we have developed and tested considers both cognitive and affective effects of critical evaluations.

The first assumption is that along the cognitive dimension critical evaluations serve an information giving function. Second, this function differs along a continuum of helpfulness. That is, a critical remark such as "You are not doing this right" at the very minimum tells a person he must change his behavior, even though it gives no further clue. The same critical evaluation can be more helpful if it is followed by a constructive suggestion as to how to do it. We hypothesize, that other things being equal, whether a criticism is accepted by a child, and how the critical person is evaluated in turn by the child, depends

on the degree of perceived helpfulness of the critical remarks. To test this assumption we have created two degrees of helpfulness.

The third major assumption states that critical evaluations have an affective component which has more personal effects. Fourth, the strength of the criticism affects the perceived extensiveness of personal involvement. That is, mild criticism is seen as disapproval of the specific act being criticized, while strong criticism is perceived as a general negative appraisal of the total person. It is further assumed that critical evaluations in the classroom setting will not only have an effect on the child's performance, but also on his relationship with other children. To test this assumption we have created two degrees of affect.

The fifth major assumption deals with the interaction between the affective and cognitive dimensions of evaluation: As criticism increases in strength, the affective component so overwhelms the person (he has to react to the attack, defend himself, or protect himself) that he is not able to use whatever informational elements may be contained in the criticism.

Following these assumptions, we would predict that a child's classwork would be least detrimentally affected by mild helpful criticism, since he will be able to use the information given and not be threatened by strong attack. Strong criticism, either helpful or non-helpful, is predicted to interfere more with the child's performance and to be detrimental to his evaluation of his own product.

The sixth and final assumption is that there will be individual differences in patterns of reaction to the various types

of evaluation. It is speculated that locus of control, particularly in relation to the child's belief that he, rather than other people, is responsible for his intellectual-academic successes and failures, may turn out to be an important variable. It is also considered that there may be sex differences in patterns of reaction to the various types of evaluation.

This study was designed to focus on critical comments varied along the affective continuum from mild to strong in combination with the presence or absence of helpful suggestions. The central notion investigated was that when the affect is strong the child will not be able to use any information given to him, but when the affect is mild, albeit critical, the child will be able to use the information provided to aid him in reaching the goal. The concomitant effects of these variations on interpersonal behavior and self evaluation were also investigated.

Experimental Procedure

The Ss in this study were 210 fourth grade pupils (105 boys, 105 girls) from a suburban school district populated primarily by white middle and upper-middle class families. Within each classroom experimental children were randomly assigned to like-sexed groups which were, in turn, randomly assigned to experimental conditions.

The experimental task consisted of a circular board, forty inches in diameter, of one half inch duraply, covered with Velcro, and 3/16 inch wooden blocks of various colors, shapes, and sizes, each backed with a piece of Velcro so they would adhere to the board. The board was divided into three sections by placement of a black ribbon. The task was designed to maximize interaction

and interdependence.

Ss worked in same-sexed groups of three on the task which was to work together to make one large design. Each S had his own section on the board but the group was free to work in any way they chose. Both the task and the goal were designed to promote interdependent behavior. While the Ss worked on the task their behavior was coded by observers trained to use a category system developed for this study. Following completion of the task Ss were interviewed individually to assess attraction to E, the group, and the task, and to ascertain the child's evaluation of the product. Pictures were taken of the completed task and scored using a quantitative index developed to provide a measure of productivity.

All children received the same set of instructions which were designed to meet the following requirements:

1. To create a group goal.

2. To create interdependence.

3. To create an initially positive atmosphere for the task.

4. To remove ordinary classroom restraints against talking and helping one another.

5. To set up requirements for the task which could be exploited in the experimental conditions.

Each group was given fifteen minutes to work on the task. During the task E interrupted every two minutes with a critical comment. There were six interruptions at predetermined time intervals and the comments were preplanned in a script. All critical comments were directed toward the group as a whole and were task oriented rather than person oriented.

There were five experimental conditions created to vary

affective tone and helpfulness. E walked around the working group in all five conditions. The six critical comments were always given in the same order. The helpful suggestions, however, were chosen from a pool of eight items in order to make them as appropriate as possible to what Ss were doing at the time.

The No Comment Condition (NC)

No critical comments made to Ss who worked uninterrupted for fifteen minutes. Control condition.

The Mild Condition (M)

Critical comments mild in affective strength.
No helpful suggestions.

The Mild-Helpful Condition (MH)

Same critical comments as in M.
Each comment combined with helpful suggestions which reminded Ss of task-requirements set down in instructions.

The Strong Condition (S)

Critical comments stronger in affect than M.
No helpful suggestions.

The Strong-Helpful Condition (SH)

Same critical comments as S.
Same helpful suggestions as MH.

Three types of measuring instruments were used: (1) coded behavior observations of Ss work pattern, interaction, and responses to E; (2) post-task interviews, and (3) quantitative scoring of the final product.

Statistical analysis was performed using the Data-Text computer program (Armor & Couch, 1972). The major analysis of the data was a two-way analysis of variance (Sex by Experimental Condition). Because there were numerous significant interactions between sex and condition, one-way analyses of variance were performed on all significant results of the two-way analysis.

Correlations were computed between observers for a measure of inter-rater reliability. Chi squares were computed on all interview questions.

Results

For clarity of presentation the results will be reported in summary tables of mean scores highlighting significant results. In order to test the theory regarding the separate and interactive effects of the two components of evaluation (affective tone and helpful information) the experimental conditions were first analyzed separately and then combined into Helpful vs. Non-Helpful and Mild Critical vs. Strong Critical. Tables include results of the one-way analysis of variance for both the un-combined and combined experimental conditions.

A summary of the major effects of negative evaluation on work and social interaction is presented in Tables 1 and 2. A summary of the rated evaluations of self and others is presented in Tables 3 and 4 (higher score = lower evaluation). A summary of the responses to E is presented in Table 5.

There were a number of significant effects of negative evaluation on fourth grade children's productivity, interaction, responses to E, and ratings made of the task, their performance, and E.

With regard to productivity, girls benefitted from the helpful suggestions, particularly in the Strong-Helpful Condition (mean = 20.28). This is shown most dramatically in the combined conditions, where the girls' total score was significantly higher in the Helpful Conditions than in the Non-Helpful Conditions (means = 17.93 vs. 13.64). Boys, however, did not do

TABLE 1

Summary of Mean Scores and F-Ratios for Work and Social Interaction in Uncombined Experimental Conditions

Behavior Category	Experimental Condition					One-Way Anova[a]	
	NC	M	MH	S	SH	F-Ratio	Significance
Total Productivity							
Boys	16.86	14.43	16.57	15.87	16.14	0.581	N.S.
Girls	16.14	14.28	.5157	13.00	20.28*	8.563	.001
Works for Self							
Boys	17.40*	13.02	4.07	18.83*	7.69	3.209	.016
Girls	7.45	13.12	2.21	12.86	23.38*	6.381	.001
Works for Group							
Boys	14.52	15.28	21.48	11.86	20.78	2.060	N.S.
Girls	26.69*	20.05	22.14*	12.33	8.57	5.205	.001
Total Interaction							
Boys	9.93	17.78	20.12*	13.67	22.74	5.556	.001
Girls	13.26	13.40	20.48	21.12	13.64	3.535	.010
Positive Social Behavior							
Boys	5.76	11.90*	10.83*	6.26	14.07*	7.092	.001
Girls	7.76	6.17	13.88*	11.28	8.52	4.328	.003
Negative Social Behavior							
Boys	2.26	4.17	5.43	4.17	6.62	Not Tested[b]	
Girls	2.76	4.83	4.00	6.00	2.28	Not Tested	
Total Evaluation							
Boys	0.74	1.78	2.31	1.57	2.26	1.908	N.S.
Girls	3.70	2.57	1.78	4.02	1.76	1.001	N.S.

N = 210 (105 boys, 105 girls)

*Significant Result

[a] df = 4, 100

[b] Two-way analysis yielded no significant F-Ratios. Therefore, no one-way analysis was performed.

TABLE 2

Summary of Mean Scores and F-Ratios for Work and Social Interaction in Combined Experimental Conditions

Behavior Category	Experimental Condition			One-Way Anova[a]		Experimental Condition			One-Way Anova[a]	
	NC	No Help	Helpful	F Ratio	Sig.	NC	Mild	Strong	F Ratio	Sig.
Total Productivity										
Boys	16.86	15.15	16.36	0.803	N.S.	16.86	15.50	16.01	Not Tested[b]	
Girls	16.14	13.64	17.93*	9.352	.001	16.14	14.93	16.64	Not Tested	
Works for Self										
Boys	17.40*	15.93*	5.88	5.473	.006	17.40	8.55	13.26	2.141	N.S.
Girls	7.45	12.99	12.80	1.012	N.S.	7.40	7.67	18.12*	6.265	.003
Works for Group										
Boys	14.52	13.57	21.23*	3.807	.026	14.52	18.38	16.32	0.600	N.S.
Girls	26.69*	16.19	15.36	4.192	.018	26.69*	21.10*	10.45	10.077	.001
Total Interaction										
Boys	9.93	15.73	21.43*	9.790	.001	9.93	18.95*	18.20*	6.004	.004
Girls	13.26	17.26	17.06	1.209	N.S.	13.26	16.94	17.38	1.224	N.S.
Positive Social Behavior										
Boys	5.76	9.08	12.45*	7.756	.001	5.76	11.37*	10.17*	5.066	.008
Girls	7.76	8.73	11.20	2.094	N.S.	7.76	10.02	9.90	0.794	N.S.
Negative Social Behavior										
Boys	2.26	4.17	6.02*	4.639	.012	2.26	4.80*	5.39	3.096	.05
Girls	2.76	5.42	3.44	3.396	.038	2.76	4.42	4.44	1.182	N.S.
Total Evaluation										
Boys	0.74	1.68	2.28*	3.830	.012	0.74	2.05	1.92	2.944	N.S.
Girls	3.31	2.34	2.26	1.932	N.S.	3.31	2.30	2.24	0.888	N.S.

N = 210 (105 boys, 105 girls)

*Significant Result

[a] df = 2, 102

[b] Two-way analysis yielded no significant F-Ratios. Therefore, no one-way analysis was performed.

TABLE 3

Mean Rated Evaluations and F-Ratios of Own and Other's Work in Uncombined Experimental Conditions

Evaluation	Experimental Condition					One-Way Anova[a]	
	NC	M	MH	S	SH	F-Ratio	Significance
Evaluation of Self							
Boys	2.76	2.71	2.42	3.14	3.38•	3.500	.011
Girls	2.76	2.71	2.67	3.24	2.90	2.413	N.S.
Evaluation of 1st Partner							
Boys	2.14	2.67	2.33	3.05•	3.38•	6.018	.001
Girls	2.68	2.28	2.43	2.86	2.57	1.851	N.S.
Evaluation of 2nd Partner							
Boys	2.38	2.62	2.43	3.19•	3.28	4.444	.003
Girls	2.52	2.38	2.43	3.05	2.62	1.981	N.S.

N = 210 (105 boys, 105 girls)

•Significant Result

[a] df = 4, 100

Note: Higher scores = lower evaluations of work.

TABLE 4

Mean Rated Evaluations and F-Ratios of Own and Other's Work in Combined Experimental Conditions

Evaluation	Experimental Condition			One-Way Anova[a]		Experimental Condition			One-Way Anova	
	NC	No Help	Help-ful	F-Ratio	Sig.	NC	Mild	Strong	F-Ratio	Sig.
Evaluation of Self										
Boys	2.76	2.93	2.90	Not Tested[b]		2.76	2.57	3.26*	6.160	.003
Girls	2.76	2.98	2.78	Not Tested		2.76	2.69	3.07*	3.522	.034
Evaluation of 1st Partner										
Boys	2.14	2.86*	2.86*	4.250	.017	2.14	2.50	3.21*	10.674	.001
Girls	2168	2.57	2.50	0.435	N.S.	2.68	2.36	2.71	2.748	N.S.
Evaluation of 2nd Partner										
Boys	2.38	2.90	2.86	Not Tested		2.38	2.52	3.24*	8.738	.001
Girls	2.52	2.71	2.52	Not Tested		2.52	2.40	2.83	2.649	N.S.

N = 210 (105 boys, 105 girls)

*Significant Result

[a] df = 2, 102

[b] Two-way analysis yielded no significant F-Ratios. Therefore, no one-way analysis was performed.

Note: Higher scores = lower evaluations of work.

TABLE 5

Summary of Means of Responses to Evaluator

Response	Experimental Condition							
	M	MH	S	SH	No Help	Helpful	Mild	Strong
Confused by E								
Boys	1.36	1.24	1.83	1.17	1.60	1.20	1.30	1.50
Girls	0.93	1.10	2.52*	1.48	1.73	1.28	1.01	2.00*
Accepts E's Influence								
Boys	0.71	3.45*	1.62	3.05*	1.17	3.25*	2.08	2.33
Girls	1.00	3.62*	2.36	2.93	1.68	3.27*	2.31	2.64
Rejects E's Influence								
Boys	0.93	0.88	2.02*	2.10*	1.48	1.49	0.90	2.06*
Girls	1.24	0.36	1.60*	1.00	1.42*	0.68	0.80	1.30

N = 210 (105 boys, 105 girls)

*Significant Result

better in the Helpful Conditions. Rather, all criticism lowered their productivity, although not significantly.

It is clear that variations in work pattern and group interaction were reflected in the final product. Patterns of working, as reflected in amount of time spent working together for the group as compared to working alone for themselves, were clearly affected by variations in negative evaluation. Girls worked more for themselves when threatened by strong criticism, apparently taking on increased individual responsibility. Boys worked together more under nearly all conditions of negative evaluation. Boys' increased working for the group was accompanied by increased interaction in the critical conditions as compared to the No Comment condition. It is suggested that critical comments, while increasing social interaction, placed restraints on the amount of work attempted, as reflected in the fact that a smaller number of blocks were used by boys in the evaluative conditions when compared with the control condition.

Support for the hypothesis of girls' increased feeling of responsibility under conditions of strong criticism was found in their evaluations of their own and their partners' work (see tables 3 and 4). While they did rate their partners lower in the Strong Critical Conditions than in the Mild Critical Conditions, they rated themselves lower than their partners. Boys also rated themselves and their partners lower in the Strong Critical Conditions. That both boys and girls responded in the same way when asked to rate their products privately is clear evidence that the criticisms had an effect on task-related self evaluations.

Interaction was subdivided into Positive and Negative Social

Behavior. Helpful suggestions from E, particularly in the Mild-Helpful Condition, encouraged the youngsters to engage in more Positive Social Behavior. Boys engaged in more Positive Social Behavior in all the critical conditions than they did in the No Comment Condition (mean scores = 11.90, 10. 83, 6.26, 14.07 vs. 5.76). This finding was consistent with their work pattern and the amount of work they did. Thus, criticism of all kinds created a need for boys to protect themselves by increasing their social interaction and support for each other while decreasing the amount of work attempted.

Girls engaged in a considerable amount of Positive Social Behavior in the Strong Condition (mean = 11.28). This rather unexpected finding is hypothesized to be related to girls' strong need for approval. When faced with clear disapproval and no suggestions for change, they were forced to turn to each other for help. Despite their need for each other, the strong criticisms restrained them from total cooperation, so that the girls spent as much time working for themselves as they did for the group in the Strong Condition. They did, however, provide helpful support for each other's individual work.

There was very little effect of negative evaluation on Negative Social Behavior. Perhaps the most interesting effect was that girls were more aggressive towards each other in the Non-Helpful Conditions than in the Helpful and No Comment Conditions (mean scores = 1.65 vs. 0.37, 0.60)[1]. This indicates a displacement onto each other of their anger toward E, who criticized but did not help. Evidently they felt restrained from expressing

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[1] F-Ratio = 6.582, p=.003

their hostility directly toward the appropriate target.

The direct responses made to E, as well as the responses to the post-task interview, indicated that boys were more affected by the variations in the intensity of the criticisms, while girls were more affected by the variations in the helpfulness of the criticisms. Both boys and girls accepted more of E's influence in the Helpful Conditions but boys were more resistant to E in the Strong Critical Conditions, while girls were more resistant in the Non-Helpful Conditions. Perhaps related to these differences in patterns of response to E is the fact that girls perceived the suggestions as helpful, while the boys often did not.

The emergence of different patterns of responsiveness to the variations in negative evaluation for boys and girls was consistent throughout the data. Table 6 highlights the significant patterns of sex difference.

In the No Comment Condition, which served as a control condition, the major differences were in working behavior and evaluation behavior. When permitted to work on the task with no external interference, girls worked far less for themselves and more for the group than boys did. Girls also engaged in significantly more evaluative behavior of all kinds than boys. This finding of more evaluational behaviors among girls was consistent with an earlier study (Pepitone, 1972) which compared boys' and girls' performance under identical task conditions. Pepitone related the differences she found to boys' greater confidence in their own abilities. Although there were no differences between boys' and girls' overall productivity in the No Comment Condition, one could speculate that boys felt more confident in the task

TABLE 6

Patterns of Sex Difference

Category and Condition	Mean (Boys)	Mean (Girls)	t-value
Working Behaviors			
No Comment Condition			
Places Pieces - Self	17.40	7.45	2.029*
Places Pieces - Group	14.52	26.69	-2.202*
Strong Condition			
Places Pieces - Self	18.84	8.79	2.084*
Strong-Helpful Condition			
Places Pieces - Self	7.69	23.38	-3.578***
Places Pieces - Group	20.78	8.57	3.557***
Evaluation Behaviors			
No Comment Condition			
Total Evaluation	0.21	3.31	-2.209*
Difficulty of Task			
Strong-Helpful Condition			
Rating	2.38	3.19	-3.242**
Strong-Critical Conditions			
Rating	2.57	3.24	-3.516***
Productivity			
Strong-Helpful Condition			
Group Score	16.14	20.28	-2.857**
Response To Evaluator			
Strong-Critical Condition			
Defensiveness	1.56	0.92	2.266*

*p=.05
**p=.01
***p=.001

because it required manipulation of blocks in spatial relationships, a characteristic allegedly more devleoped in males. The boys did, in fact, rate the task as less difficult in the Strong-Helpful and

Strong-Critical Conditions than girls did. The girls' working behavior also could indicate a lack of confidence in themsleves and an increased reliance on each other. This pattern of reliance on each other when there was no help from E was particularly evident in the working behavior of girls in the Strong Condition as compared to the Strong-Helpful Condition. As soon as there was help from an authority figure, girls worked for themselves more, and were more productive. Boys, on the other hand, worked for the group more in the Strong-Helpful Condition.

The pervasive differences appear to be related to girls' positive responses to suggestions from E and boys' negative responses to strong criticism. These differences may well be related to differences in the achievement motives of males and females. Hoffman (1972) has pointed out that "boys learn effectance through mastery, but girls are effective through eliciting the help and protection of others" (p. 148). She related female achievement behavior to affiliative needs. While boys attempt to master the task, girls attempt to achieve through pleasing the teacher. Following this reasoning, girls would be expected to change their work to please the teacher, while boys would resent criticism more. The stronger the disapproval, the more girls would work to gain approval. The finding that girls did do best in terms of their final product in the Strong-Helpful Condition is consistent with the suggestion that girls' achievement behavior is motivated by a desire to please. Also consistent with this theory was the finding that boys were more defensive than girls in the Strong Critical Conditions. Thus, the boys' feelings of competence, indicated by their rating of the task as relatively

easy. were contradicted by E's criticisms, resulting in increased defensiveness. It seems clear that boys, with their stronger motivations toward mastery and their weaker desire for approval, would defend themselves when under attack, and be more ready to express hostility toward and dislike of the one who critizes them. Girls, on the other hand, because of their great need for approval, would be expected to be less likely to express any hostility or dislike of a teacher figure. The findings of this study are consistent with this model of achievement motives.

Support for the Theory of Negative Evaluation

The complexity of this investigation into the effects of negative evaluation on the work and behavior of elementary school children precludes any simple and definitive statement regarding the viability of the theoretical model which was developed and tested. Considerable support for the existence of the information-giving and affective components was derived from the differences in patterns of interaction and productivity under different conditions of negative evaluation. The emergence of these differences supports the contention that variations in helpfulness and affect were indeed created experimentally.

The major findings of this study indicate that negative evaluation is complex and there is no simple relationship between criticism and productivity or behavior. Acceptance of criticism did appear to be related to the perceived helpfulness of the critical remarks. Girls, in particular, were likely to make use of the constructive suggestions offered by E and it was the girls more often than the boys, who percieved E as helpful in the Helpful Conditions. The affective component of criticism was

reacted to more by boys than by girls. Strong criticisms resulted in increased defensiveness among boys, as predicted, and was associated with correspondingly less positive social behavior and lowered quantities of execution. The assumptions regarding the interactive effect of the affective and cognitive dimensions of criticism were supported for boys in that they did consistently better in the Mild-Helpful Condition than in the Strong-Helpful Condition, as shown by several of the subscores of the productivity index. Boys were more defensive in the Strong-Helpful Condition than in the Mild-Helpful Condition. Girls, on the other hand, were not more defensive in the Strong-Helpful Condition and their productivity scores were higher in the Strong-Helpful Condition than in the Mild-Helpful Condition. Thus, the findings support the assumption that when personal defensiveness is aroused, informational elements are not used as effectively.

One possible interpretation of the lack of defensiveness among girls under conditions of strong criticism is that although the comments were labeled strongly critical, they were, in fact still relatively mild. Also, task oriented criticisms are assumed to be far less threatening than personal criticisms. Since we varied criticisms within a rather narrow range of affective strength, we can not be sure specifically what the reactions would have been under stronger, more personal, critical remarks.

A pattern of responsiveness which included increasing tension was found, especially under conditions of strong criticism, but the groups did not disintegrate. It seems reasonable to speculate that the effects would be magnified if the criticisms were stronger and thus more threatening. There may be several

explanations for the boys reacting more than the girls to the affective component of criticism: (1) They receive more criticism from teachers daily in their classrooms, and they may have developed lower thresholds of sensitivity to criticism than girls. (2) Boys' greater confidence in their ability may have resulted in an unwillingness to accept E's influence. They held to their own way of working, so that they were more defensive, but also did not use E's suggestions, which resulted in lower productivity. (3) Boys have different achievement motives than girls and their need for mastery might lead them to resent external criticisms while girls with their dependency needs might be less overtly resentful of criticism and simply work harder to gain approval.

The effects of the variations in negative evaluation on the social interaction was different in some respects from what had been predicted. Overt evaluational acts among Ss were relatively infrequent. Boys did more evaluating of themselves and others in the Helpful Conditions while girls did more evaluating in the No Comment Condition than in any of the other conditions. The boys' greater evaluation in the Helpful Conditions may be still another way in which their defensiveness was manifested, as they attempted to reconcile their work with E's suggestions without accepting the suggestions. Presumably, girls' dependency needs led them to demand some kind of evaluation. When none was forthcoming from E, as in the No Comment Condition, they supplied their own evaluations.

During the group process, individuals did not devalue their own group product. Perhaps social restraints such as are present

in groups prevented them from doing so. For, when later asked privately by the interviewer about the "goodness" of the group product, both boys and girls devalued their own product and the product of others in the Strong Critical groups. This clearly show that the strong criticisms got to both boys and girls, but they reacted to them differently. So many other differences were found between boys and girls that the uniformity of this particular response makes it all the more notable.

Both boys and girls had increased total interaction under conditions of negative evaluation as compared to their behavior in the control condition. This finding is in agreement with theoretical models which predict increased security operations and cohesiveness as a result of external threat. Following this theory, the increasing tension in the groups, particularly under the conditions of strong criticism, resulted in increased social interaction. As to specific types of positive and negative interaction, the theory predicts more positive than negative interaction. While this was indeed the case, there were strong interaction effects between specific conditions and sex so that no clear cut trends emerged.

The inconsistencies in the effects of criticism reported in the literature can be interpreted in light of the findings of this study, in terms of the affective and informational components of negative evaluation. Our theory predicts that when criticisms are non-threatening and perceived as helpful, they will be positively related to achievement. When criticism is viewed as non-constructive, it will be reacted to in a variety of ways, none of which improve performance. With increasing intensity performance may actually be hindered.

Implications for the Classroom

It is necessary to reexamine the use of criticism in the classroom--its potential value and its potential harm. The results of this study are in agreement with Rosenshine's (1971) conclusion in that they do not show that a teacher should always refrain from telling a child he is wrong. However, the way in which the message is given will affect the way in which it is received.

Criticisms which are not helpful and which are strong in affect can result in increased negative behavior, decreased productivity, and increased dislike for the task and the teacher. Critical comments which are primarily informational and offered when there is felt need can be constructive. A straightforward critical comment such as "This arithmetic problem is wrong. Why don't you try it this way?" is probably considerably more useful than praise for effort, which is likely to be confusing to the child if his answer is still wrong.

It has been clearly demonstrated that boys and girls respond differently to influence attempts by an adult. Thus, if teachers wish to influence a child to change his behavior, which, after all is the primary purpose of negative evaluation, they will need to use different methods for girls and boys. Since boys appear to strive for mastery, and they do not respond well to strong criticism, efforts must be made to channel their energy toward independent problem solving without being overly critical of their behavior or their approach to the problem. Girls, on the other hand, with their dependency needs and need for approval, appear to be most easily influenced through the use of objective

disapproval combined with suggestions for changing their behavior. The use of this technique, however, might very well reinforce girls' already high dependency needs. Whether this is a desirable goal for the education of girls is a value laden question which this empirical research cannot answer.

If a major goal of education is to help children grow into independent thinkers capable of creative problem solving, external negative evaluation may be a serious hindrance. Such a goal requires the development of internal evaluation, so that each individual may judge the worth of his own ideas and solutions to life problems. However, as long as evaluation remains an integral part of the educational process, every effort must be made to find ways to make it constructive. "Destructiveness and creativity are opposed forces in the life of the mind. To create is to construct, and to construct cooperatively is to lay the foundation of a peaceful community" (Ashton-Warner, 1963, p. 11).

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